REMARKS/AGRUMENTS

Reconsideration of this application, as amended, is respectfully requested. The following remarks are responsive to the Office Action mailed October 6, 2003.

Claims 1-27 are pending.

Claims 1-27 stand rejected.

Claims1-2, 4, 8, 10, 18-19, and 26-27 have been amended. It is respectfully submitted that no new matter has been added.

Claims 1-7, 10-16, and 19-25 are rejected under 35 U.S.C. §102(b) as being anticipated by Wu et al., "An Efficient Software-Hardware Collaborative Profiling Technique for Wide-Issue Processors," October 1999 (hereafter, "Wu").

Claims 8-9, 17-18, and 26-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wu in view of Conte, et al., "Using Branch Handling Hardware to Support Profile-Driven Optimization", ACM 1994. (hereafter "Conte").

CLAIM REJECTIONS – 35 USC §102 (b)

The Examiner rejected claims 1-7, 10-16, and 19-25 under 35 U.S.C. §102(b) as being unpatentable over Wu. Applicants submit that claims 1-7, 10-16, and 19-25 are not anticipated by Wu. In regard to the rejection of claim 1, the Examiner has stated in part that:

> Wu discloses "A method comprising: using hardware and software...to perform continuous edge profiling on a program;...detecting profile phase transitions continuously;...optimizing the program based upon the profile phase transitions and edge profile..."
> (10/6/03, Office Action, p. 2)

Applicant respectfully submits that claims 1-7 are not anticipated by Wu. Claim 1 recites the feature of "detecting profile phase transitions repeatedly." (Emphasis added) This feature is not disclosed by Wu. Infact, Wu describes an efficient software-hardware collaborative profiling technique. (Wu, title) "Profiling" in Wu involves determining the frequency which program

blocks are actually taken during execution. Traditional profiling techniques insert three software instructions in each program block to: load a counter from memory, increment the counter, and store the counter to memory. (Wu, p.1, para. 4) Wu provides a new technique for profiling that uses program block IDs, and uses hardware to load, increment, and store the counter. Wu's **Figures 3** and **5** show that each time a branch of a program is executed, the operations to load, increment, and store are generated by hardware. However, Wu does not describe anything more than gathering profiling information. Wu describes using "profile counters", "branch-id instructions" and "update operations to manipulate profile counters" for generating profiles for program blocks, i.e., the frequency with which program branches are taken. "Gathering profile information" is not detecting profile phase transitions. More specifically, Wu does not disclose "detecting profile phase transitions repeatedly" as stated in applicant's claim 1. (emphasis added) Because, Wu does not disclose this feature taught by applicants' claim 1, applicants respectfully submit that claim 1 and claims 2-5 which depend from claim 1 are not anticipated under 35 U.S.C. §102(b) by Wu.

The Examiner also rejected in claims 10-16 under 35 U.S.C. §102(b) for the reasons set forth in the rejection of claim 1. Claim 10 discloses substantially similar features as claim 1, and recites "the system...detects profile phase transitions repeatedly." (Emphasis added) Additionally, Wu does not disclose "a second logic device connected to the profile cache configured to generate a phase transition interrupt signal." (Emphasis added) Because, Wu does not disclose these features as taught by applicants for the reasons discussed above with regard to claim 1, applicants respectfully submit that claim 10 and claims 11-16 which depend from claim 10 are not anticipated under 35 U.S.C. §102(b) by Wu.

The Examiner also rejected in claims 19-25 under 35 U.S.C. §102(b) for the reasons set forth in the rejection of claims 1-7. Claim 19 discloses substantially similar features as claim 1, and recites "detecting profile phase transitions continuously." (Emphasis added) Because, Wu

does not disclose this feature as taught by applicants for the reasons discussed above with regard to claim 1, applicants respectfully submit that claim 19, and claim 20-25 which depend from claim 19 are not anticipated under 35 U.S.C. §102(b) by Wu.

CLAIM REJECTIONS – 35 USC §103 (a)

The Examiner has rejected claims 8-9, 17-18, and 26-27 under 35 U.S.C. §103(a) as being unpatentable over Wu in view of Conte.

In regard to the rejection of claims 8-9 under 35 U.S.C. §103(a), the Examiner has stated in part that:

> Wu does not disclose, "generating an interrupt signal by the hardware when the profile phase transition occurs." Conte discloses a transition of profiling that uses a counter to update a branch target in a program. Therefore, it would have been to one of ordinary skill in the art at the time the invention was made to modify status register which is used to handle profile branching of Wu from the teaching of error handling shown by Conte in branch profiling for handling counter overflow.

(10/6/03 Office Action, p. 5).

Applicants submit that claims 8-9, 17-18, and 26-27 are not obvious in view of Wu and Conte. It is respectfully submitted that it would be impermissible hindsight, based on applicant's own disclosure, to combine Wu and Conte.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988.

However, nowhere is there any indication that the references provide any motivation for the recited combination. Instead, it appears the teachings of the present application have been used as a blueprint to gather together and assemble various components of the prior art in the

manner contemplated by applicants. This is a classic example of the use of hindsight reconstruction, and cannot properly be used as grounds for rejecting the present claims.

The U.S. Court of Appeals for the Federal Circuit has strongly criticized such applications of hindsight by specifically indicating that when an obviousness determination is made based upon a combination of references, even a patent examiner "must show reasons that the skilled artisan, confronted with the same problems as the inventor *and with no knowledge of the claimed invention*, would select the elements from the cited prior art references for combination in the manner claimed." *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998) (Emphasis added). Merely indicating, as the Examiner argues in his Office Action of October 6, 2003, that the claimed invention would be obvious to one of ordinary skill in the art based on the combination of the references is utterly inadequate. *Rouffet,* at 1357. Instead, what is needed is a showing of motivation, either from the references themselves or the knowledge of those of ordinary skill in the art, for the combination being relied upon. *Rouffet,* at 1357.

In the present case, there has been no showing of such motivation. Instead, the Examiner attempts to deconstruct the subject matter of the claims of the present application into its constituent components, states where each such component may be found in one of the cited references, and then concludes that it would have been obvious to combine the references to arrive at the claimed invention. This bare bones analysis is not sufficient to support a determination of obviousness of the present application. The burden is on the Examiner to show *why* one is so motivated as to come up with the combination being relied upon. *Rouffet,* at 1357-1358 ("If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields [an infringer or the Patent Office] could routinely identify the prior art elements in an application, invoke the lofty level of skill, and rest its case for [obviousness]. To counter this potential weakness in the obviousness construct, the suggestion

to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.")

In regard to the rejection of claims 8-9, even if Wu and Conte were combined, such a combination would lack one or more features of claim 1 from which claims 8-9 depend. Amended claim 1 recites the feature of detecting profile phase transitions repeatedly. (emphasis added) Wu does not disclose this feature as disclosed in applicants' claim 1. for the reasons discussed above regarding the rejection of claim 1.

Nor does Conte disclose "detecting profile phase transitions continuously" as claimed by applicant. Conte describes a method for obtaining profile information without significant run-time slow-down (e.g., 0.4% - 4.6%). (Conte, pp. 12-13). Conte discusses several hardware branch prediction mechanisms. The goal of Conte's paper is to demonstrate that the contents of hardware branch buffers can be used to add weights to a statically – built control flow graph (CFG). (Conte, p.14, § 3) The weights indicate which traces are analyzed. (Conte, p.16, § 3.4). Conte's **Figure 4** shows a comparison of "actual profiles" to "estimated profiles". The comparison results in certainty values, such as the percentage probability that the estimated profiles are correct. However, Conte's profiling method does not address phase transitions, and therefore, does not teach "detecting profile phase transitions repeatedly." Thus, because neither, Wu nor Conte disclose applicant's claim 1, applicant respectfully submits that claim 1 is not obvious under 35 U.S.C. §103(a) by Wu in view of Conte. Given that claims 2-9 depend from claim 1, applicants respectfully submit that claims 1-9 are not obvious under 35 U.S.C. §103(a).

The Examiner also rejected claims 17-18 under 35 U.S.C. §103(a) for the reasons set forth in the rejection of claims 8-9. Claim 10, from which claim 17-18 depend, discloses substantially similar limitations as claim 1 and recites the system detects profile phase transitions repeatedly. Because Wu, in view of Conte, does not disclose this feature and given that claims 11-18 depend from claim 10, applicants respectfully submit that claims 10-18 are not obvious under 35 U.S.C. §103(a) by Wu, in view of Conte.

The Examiner also rejected claims 26-27 under 35 U.S.C. §103(a) for the reasons set forth in the rejection of claim 8-9. Claim 19, from which claims 26-27 depend, discloses substantially similar limitations as claim 1 and recites detecting profile phase transitions repeatedly. Because Wu, in view of Conte, does not disclose this feature and given that claims 20-27 depend from claim 19, applicant respectfully submits that claims 19-27 are not obvious under 35 U.S.C. §103(a) by Wu, in view of Conte.

For the foregoing reasons, applicant respectfully submits that the applicable objections and rejections have been overcome and that the claims are in condition for allowance. If there are any additional charges, please charge them to our Deposit Account No. 02-2666.

Respectfully submitted,

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